BUNN® TECHNICAL TRAINING

Dual SH BrewWISE® DBC

BUNN

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Unit Objectives

Given a realistic scenario depicting a new site install, the learner will be able to install and setup the brewer for customer turnover without error.

Given a new machine, all the necessary tools and safety equipment, the learner will be able to install the brewer without error.

The learner will be able to verify that the site requirements have been met.
The learner will be able to locate and document the serial number.
The learner will be able to hook up the water supply.
The learner will be able to hook up the electrical supply.

Installation

Site Requirements

Space
• Counter able to support the weight of the machine, approximately 185 pounds wet • Counter area able to support machine placement 35.8”H x 18”W x 21.2”D

Water Treatment
• Sediment filtration to reduce large particles • Taste and odor filter to remove chlorine • Scale filtration as needed • For best results a Bunn Easy Clear® filtration system should be used

Plumbing
• ¼” flare fitting on the machine • Dedicate water supply with shut-off • Connected to the cold water supply • Water pressure 20-100psi, 50psi if regulator is needed

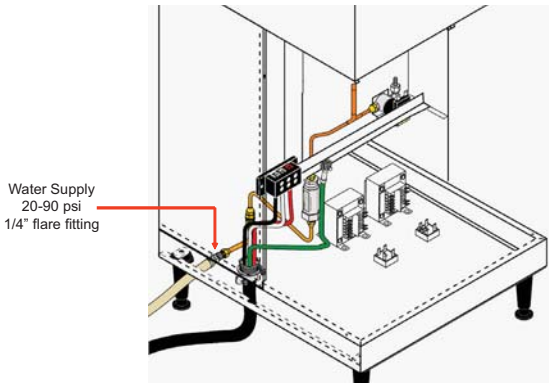
Electrical
• 120/208VAC or 120/240VAC • 3 wire plus ground (Neutral, L1, L2, ground) • 30 amp dedicated circuit (breaker, plug, and receptacle) • Receptacle within 5 feet of machine • If a power cord is not attached to the machine the technician will have to supply and install the cord

Location of the Serial Number

The machine’s serial number is located on the data plate which is attached to the bottom of the front panel. The serial number begins with the word DUAL. The complete serial number will need to be documented on all work orders and warranty tags.

Water Supply Install

Step 1: Check water pressure, install a regulator if above 90psi.
Step 2: Flush water lines.
Step 3: Install shut-off valve.
Step 4: Attach the water line to the ¼” flare fitting on the bottom of the machine.



Electrical Install

Refer to the electrical section of the machine’s data plate to select the proper power cord, plug and receptacle for the brewer. An electrician must provide electrical service as specified in conformance with all local, state, and federal electrical codes.

Since the brewer is thermostatically controlled, 100% of the circuit breaker can be used. This will allow the machine to be installed on a 30 amp circuit instead of a 50 amp circuit.

Step 1: Remove the front panel (11 flat head screws).
Step 2: Feed the power cord through the strain relief in the bottom of the machine.

Step 3: Attach the wire ends to the terminal block.
Step 4: Attach the ground wire to connector on the frame cross bar.
Step 5: Check that all connections are tight.
Step 6: Tighten the strain relief and replace the front panel.
Step 7: Plug the unit into the power source.

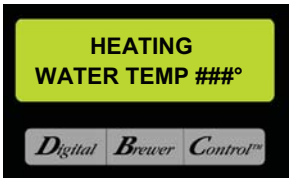
Initial Start-Up

Note: If the brewer has a serial number prior to DUAL0680000 the machine does not have an On/Off switch and will turn on when the unit is plugged in.

Step 1: Flip the On/Off switch to the On position.

When the machine is turned on, it will begin to fill the tank. After the tank fills the machine will automatically begin the heating cycle. This will take approximately 20 minutes.

Once the water temperature has reached the programmed Brew Lockout temperature it will display the ready screen. The machine will continue to heat until it reaches its programmed shut-off temperature.



UNIT 2 SETUP

Unit Objectives

Given a realistic scenario depicting a new site install, the learner will be able to install and setup the brewer for customer turnover without error.

Given an installed machine, all the necessary tools and safety equipment, the learner will be able to set the machine up for initial operation.

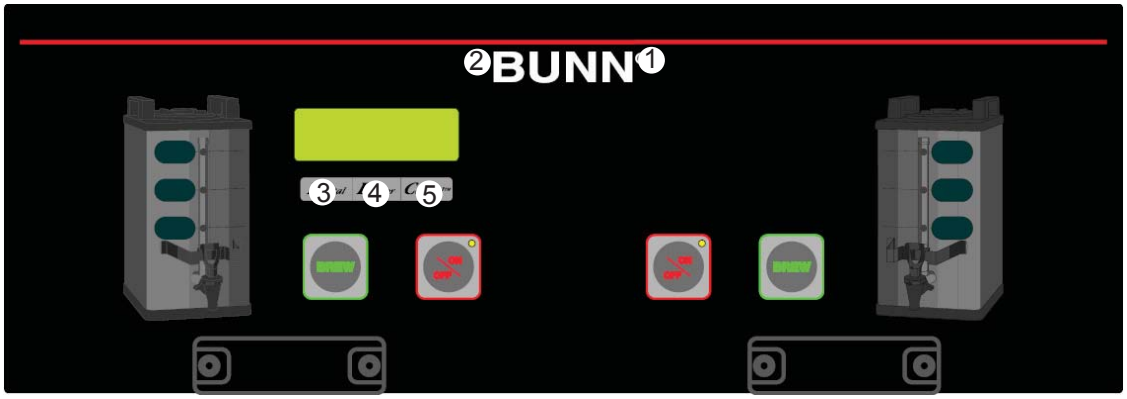
The learner will be able to power on the machine.
The learner will be able to perform the calibrations.

Setup and Programming

The BrewWISE® software is the latest evolution of BUNN's digital brewer control (DBC®) system. The software allows precise brewing control and multiple extractions recipes to be stored on the brewer and onboard troubleshooting capabilities for the technician. The software also allows the brewer to communicate with a DBC® grinder, to reduce operator errors when selecting products and batch sizes.

Accessing and using the brewer's programming features is done from the front panel and requires no special tools.

The programming menu is accessed by pressing the hidden switch, located under the trademark symbol, on the right side of the Bunn logo. The hidden switch on the left side will allow you to scroll backwards.



1 Right Hidden Switch: This is used to access the programming mode and is also used to scroll forward through the function list.

2 Left Hidden Switch: This is used to scroll backwards through the function list.

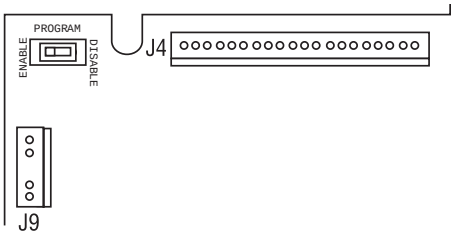
3 Digital (lower left under the display): This is used to select options that appear on the display during programming.

4 Brewer (center under the display): This is used to select options that appear on the display during programming.

5 Control (lower right under the display): This is used to select options that appear on the display during programming.

Programming Lockout

If the programming cannot be accessed then the programming lockout switch is in the Disable position. The switch is located on the control board. Remove the top panel, locate the switch and place it into the Enable position.



Level 1 Programming

Press the hidden switch for one second to access.

BREW LOCKOUT ?		
ON	DONE	OFF

Level 2 Programming

Press and hold the hidden switch for 5 seconds.

SET NEW RECIPE ?	
NO	YES

This screen is for setting water volumes for the Brew (dump) valve and the Bypass valve. Pulse Brewing will also be found in this screen.

REVIEW RECIPES ? **NO YES**	This screen allows the user to preview recipes that are already programmed you can also modify or set the recipes manually in this screen.
ASSIGN RECIPE ? **NO YES**	This function allows for assigning a coffee name other than No-Name to the brew switch. Note: This function is only on machines with serial number DUAL0680000 and later.
COPY SETTINGS ? **NO YES**	If one NO NAME coffee is set up, this function allows you to copy the settings to the opposite side.
ENABLE ADS ? **NO DONE YES**	This screen allows the operator to utilize the screen for advertising; a tag card can be programmed with your message.
SET TEMP 200° **(-) DONE (+)**	Sets the temperature of the brew tank.. Range of 185°F to 205°F
SET READY 195° **(-) DONE (+)**	This function sets the minimum temperature to start a brew cycle (BREW LOCKOUT). Range of 179°F min. to 203°F max. (or within minimum 2° of tank target temp).
XXX REFILL 155 **(-) DONE (+)**	Set the sensitivity of the refill circuit. Range of 20 (Open circuit) to 230 (Short circuit). Can be adjusted for different water conditions. Increase number for very soft water. Default is 155
L SPRAY Oz/M: 39.2 **(-) DONE (+)**	Enter new number for each spray head, after doing CALIBRATE FLOW and measuring output.
R SPRAY Oz/M: 39.2 **(-) DONE (+)**	Enter new number for each spray head, after doing CALIBRATE FLOW and measuring output.
L BYPASS Oz/M: 24.1 **(-) DONE (+)**	Enter new number for each bypass valve, after doing CALIBRATE FLOW and measuring output.
R BYPASS Oz/M: 24.1 **(-) DONE (+)**	Enter new number for each bypass valve, after doing CALIBRATE FLOW and measuring output.
CALIBRATE FLOW ? **NO YES**	Technician can measure actual flow rate through all 4 valves with 60 second flow test.
BREW COUNTERS ? **NO YES**	Allows the operator to track the number of brew cycles completed left, right, Combined (resettable) & Combined (no reset).
FUNNEL DETECT ? **NO DONE YES**	YES allows the operator to prevent the start of a brew cycle, must have a Smart funnel. NO does not need Smart funnel to brew.
SERVER DETECT ? **NO DONE YES**	Prevents the start of a brew cycle if a Soft Heat® server is not in place.

FACTORY DEFAULTS NO YES	Allows technician 4 test modes, operate all load components, test touch pad switches, test server detection, and test frequency of funnel sensing coils.
SERVICE TOOLS ? NO YES	Allows operator to erase anything previously set and returns to factory settings. You will lose calibrations, recipes, adjusted brew volumes, etc.

Level 3 Programming

Press and hold the right hidden switch for 10 seconds.
Insert a digital thermometer probe into the water tank and wait for the temperature reading to stabilize.

200° CAL→ 200°
(-) DONE (+)

Calibrating Flow Rate

Prior to programming the machine or brewing any coffee, the flow rates for the dispense and by-pass valves on the left-hand and right-hand sides must be calibrated. The flow rate will vary location to location and machine to machine.

Access Level 2 Programming.

Check and Adjust the Dispense Valve Flow Rate
Step 1: Scroll to Calibrate Flow select Yes.

CALIBRATE FLOW ?
NO YES

Step 2: Select Yes at the next screen to dispense from the brew valves.

SPRAY HEAD CAL ?
NO YES

Step 3: Ensure the sprayhead and funnel are in place and put a container, measuring pitcher or server, underneath the funnel, select Yes.

CONTAINER RDY ?
QUIT YES

Step 4: To activate the flow rate check, press the Brew button of the side of the machine you wish to check.
Step 5: The valve will open for 60 seconds. Once all of the water has dripped out, input the volume into the brewer.

LEFT OZ 36.0
QUIT YES

Check and Adjust the Bypass Valve Flow Rate
Step 1: Scroll to Calibrate Flow select Yes.

CALIBRATE FLOW ?
NO YES

Step 2: Select No at the next screen to dispense from the brew valves.

SPRAY HEAD CAL ?
NO YES

Step 3: Select Yes at the next screen.

BYPASS	CAL ?
NO	YES

Step 4: Ensure the sprayhead and funnel are in place and put a container, measuring pitcher or server, underneath the funnel, select Yes.

CONTAINER	RDY ?
QUIT	YES

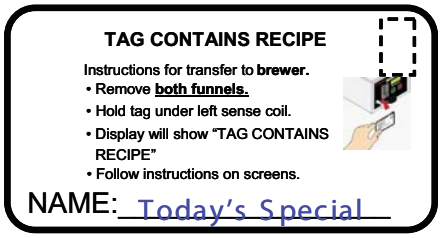
Step 5: To activate the flow rate check, press the Brew button of the side of the machine you wish to check.
Step 6: The valve will open for 60 seconds. Once all of the water has dripped out, input the volume into the brewer.

LEFT	OZ	24.2
QUIT		YES

The process needs to be repeated for both sides of the brewer.

Programming the Recipes

Every Dual brewer will have a recipe programmed into the main control board. Large customers of Bunn will have a specific recipe and specific control board installed in their brewers. Most often, if a technician is asked to modify a brewer's recipe it will be done using a recipe card. The recipe card allows new programming data to be uploaded to the brewer wirelessly.


TAG CONTAINS RECIPE
Instructions for transfer to brewer.
• Remove both funnels.
• Hold tag under left sense coil.
• Display will show "TAG CONTAINS RECIPE"
• Follow instructions on screens.
NAME: Today's Special

The recipe card will contain all of the coffee parameters for the customers coffee flavor profile including: Coffee Name, Brew Volumes, Bypass Percentages, Pulse Brew Times, PreInfusion Times, and Drip-Out Times.

To upload the recipe onto the brewer, remove the funnels and place the card under the left hand funnel sensing coil. The machine will recognize the recipe card and prompt to upload the recipe on the display.

Default Values

Brew Lockout	YES
Brew Volumes	
Small batch	64 OZ.
Medium batch	128 OZ.
Large batch	192 OZ.
Bypass Percentage	
Small batch	0%
Medium batch	20%
Large batch	20%
Pulse Brew Times	
Small batch	:40/:10/:5
Medium batch	Off
Large batch	Off
Pre-Infusion Times	
Small batch	Off
Medium batch	Off
Large batch	Off
Drip Out Times	
Small batch	1:00
Medium batch	1:30
Large batch	2:00
Enable Ads	Yes
Brew Temperature	200º F (93º C)
Ready Temperature	195º F (91º C)
Refill	155
Spray (Oz/Minute)	39.2
Bypass (Oz/Minute)	24.1
Funnel Detect	Yes
Server Detect	Yes

UNIT 3 MACHINE COMPOSITION

Unit Objectives

Given a realistic scenario in which the learner has access to the machine's internal components the learner will understand the composition and functions of the brewer.

Given a realistic scenario requiring the learner to access the internal components of the machine the learner will be able to remove the front panel and top cover.

The learner will disconnect the electrical and water supply.
The learner will remove the front panel and top cover.

Given an operating machine the learner will be able to give a general explanation of how the unit operates.

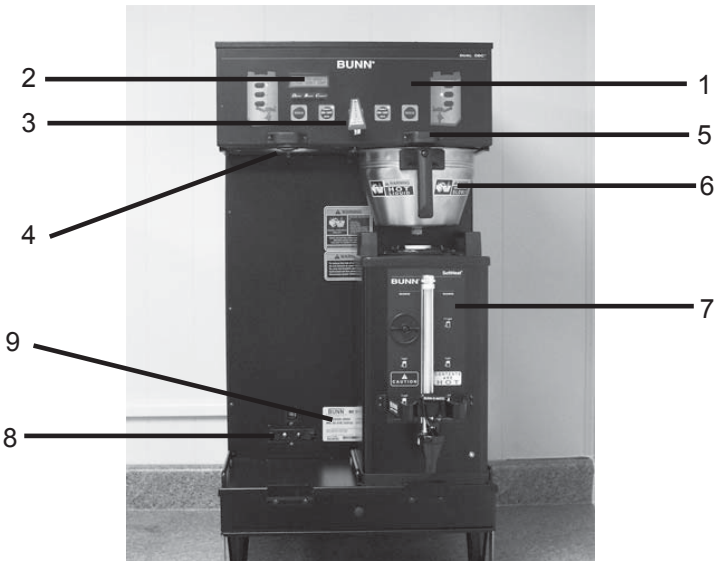
The learner will be able to identify the functions of the main control board and identify the components that correspond to each triac.
The learner will be able to identify the components and functions of the filling system.
The learner will be able to identify the components and functions of the heating system.
The learner will be able to identify the components and functions of the dispensing system.
The learner will be able to identify the components and functions of the coffee holding system.

Machine Composition

Exterior Overview

Product Outlets and Removable Parts

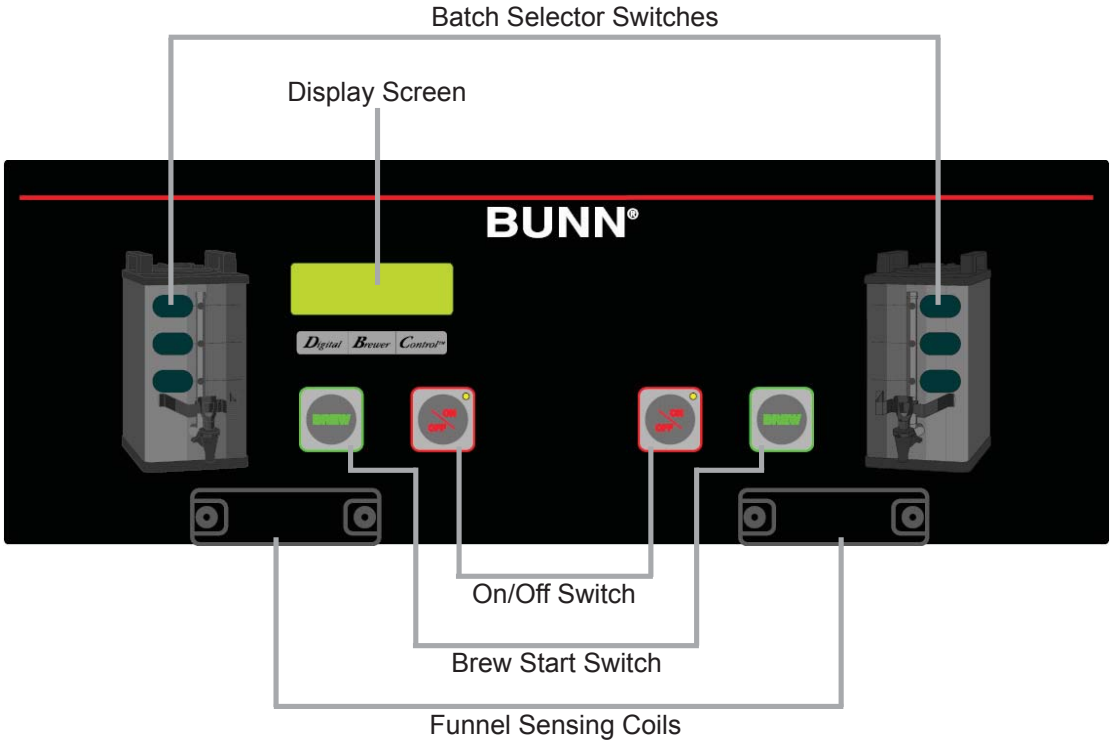
- User interface (1)
- Display (mounted to the control board) (2)
- Hot water outlet (3)
- Sprayhead (4)
- Funnel sensing coil (5)
- Funnel (6)
- Server (7)
- Server electrical contacts (8)
- Data plate (9)



User Interface

The user interface is a membrane switch adhered to the front of the brewer. The membrane is connected to the control board by a ribbon cable. The user interface allows the user to select product size and begin a brew cycle.

The machine's display is mounted to the control board. The display is visible on the front of the machine and provides information to the user and to the technician.



Accessing the Inside of the Brewer

The majority of service work done to the Dual SH BrewWISE® brewer will require the service technician to access the inside of the unit. The brewer has three removable panels to facilitate access- the front panel, the top panel, and the server base panel. Depending on the repair the technician may have to remove one or all of these panels.

In order to work safely the power should be disconnected prior to removal of any body panel. Once the panels are removed the power can be reconnected in order to troubleshoot the machine.

The top panel is secured with 4 small flat head screws. To the remove the panel, remove the four screws, lift the front of the panel up and slide the rear backwards to unhook the panel from the brewer's body.

To remove the front panel, first remove the funnels and servers from the machine. The front panel is secured to the brewer with 11 standard screws. Remove the screws and pull the panel straight off of the unit.

The server base plate is secured to the body of the brewer with 4 standard screws, 2 on each side. Remove these four screws and slide the base plate forward. Before removing the base plate from the machine, the wires will need to be disconnected from the server contacts.

Machine Function and Operations

Main Control Board

The main control is the brain of the brewer. In the Digital Brewer Control (DBC®) system, the control board is the single component that contains all of the programming software, it interprets all the data it receives from the level and temperature sensors and activates components to fulfill those demands. The main control board responds to the users input through the membrane switch and activates and controls the brew cycle. The control board can receive data from Smart Funnels® through the sensing coils on the front of the machine.

The control board is interchangeable between the single and dual brewers. There is jumper located on the board to select either single or dual with dual being default.

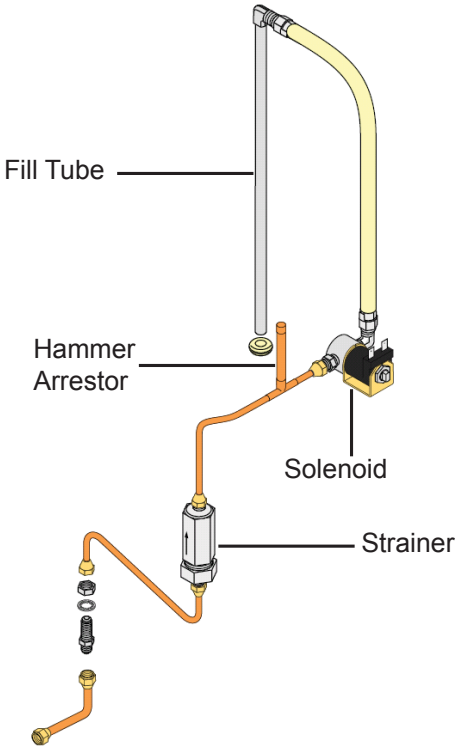
In a digital brewer the control board takes the place of the liquid level control board, the timer board, and the mechanical thermostat. All of these components are combined into a single unit.

Filling System

The fill system maintains the level of water in the brewer's tank. Anytime water is drawn off of the tank during a brew cycle, the fill circuit activates to refill the tank.

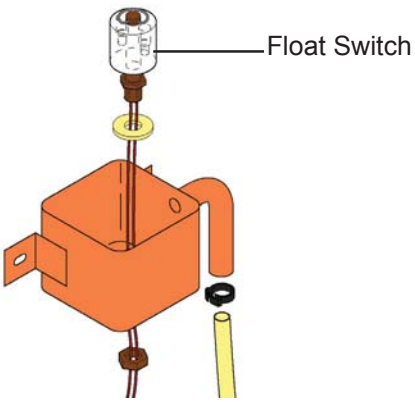
The fill system consists of:
- 120V solenoid inlet valve
- Fill probe
- Overflow cup

Water enters the brewer through the water supply line and enters the chassis through copper tubing. The water flows through a strainer assembly; this strainer contains a fine mesh screen to keep any large particles from entering the inlet valve. It is important to note that there is no flow control device in this strainer. From the strainer the water flows to the fill solenoid; there is a built in water hammer arrestor on the line between the strainer and the solenoid valve.



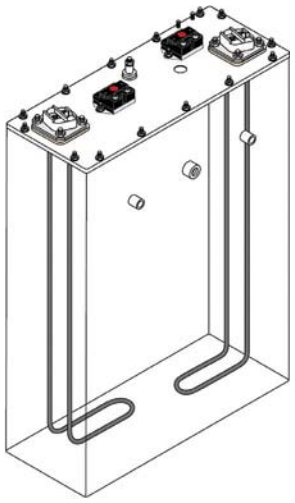
The 120VAC solenoid inlet valve is activated by the control board anytime the brewer calls for water. The valve opens and allows water to flow, under line pressure, to the top of the tank where the silicon tube connects to an stainless steel fill tube. The fill tube runs to the bottom of the tank where the incoming water enters the tank.

The control board monitors the level of water in the tank through a low voltage level probe mounted to the top of the tank. The control board grounds a 2.5VAC signal to the tank through the water. If it looses this signal, the control board will activate the inlet valve.



The brewer features an overflow safety system for the fill circuit. There is a tube mounted on the top of the tank that will drain water if the tank fills to the top and continues to fill. The water will drain into the overflow cup; there is a float switch in the cup. When this switch floats to its top position this signals the control board to deactivate the fill circuit and heating circuit.

Heating System

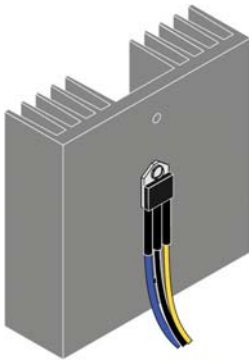


The heating system consists of:
- Water tank
- Heating elements
- Triacs
- High-limit thermostats
- Temperature sensor

The heating circuit maintains the water in the tank at a preset temperature this ensures that the water is always ready for brewing.

Water for brewing is contained in an 8.4 gallon stainless steel tank. This tank contains 2 heating elements that are powered by the line voltage into the machine. Each heating element is controlled by the control board through triacs mounted on the back of the brewer. Each heating element circuit has a limit thermostat that will interrupt the circuit if the water in the tank overheats.

The control board monitors the water in the tank by a temperature sensor that is in contact with the water. This temperature sensor is a digital thermistor; the control board reads the temperature as value of resistance. The temperature sensor allows the control board to trigger the two heating element triacs when the temperature drops below its programmed value and shut down the trigger voltage when the water temperature reaches the programmed holding value.

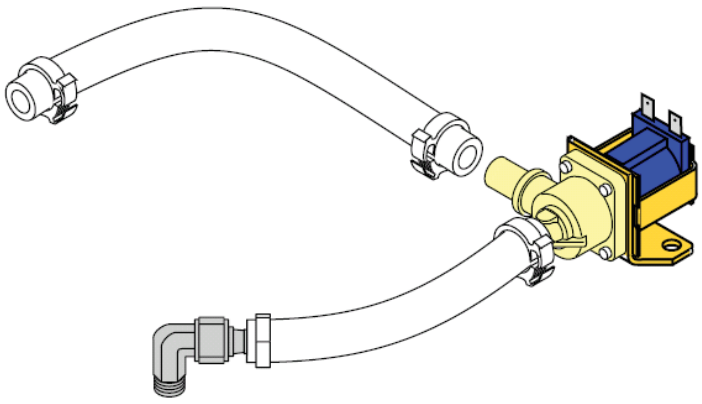


Dispensing System

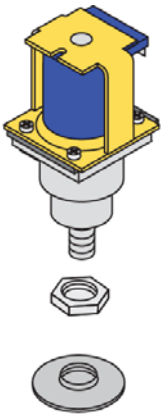
The dispensing system consists of:
- Brew valve
- Bypass valve
- Sprayhead
- Funnel
- Funnel lock solenoids

The dispensing system is what makes the brewer a coffee brewer. It dispenses the water onto the ground coffee to create the product.

The BrewWISE® brewer is a gravity dump brewing system. During the brew cycle the brew and bypass valves open allowing water to flow from the tank and out the product outlets. The control board opens and closes these valves according to its programming based on the specific recipe called for. The sprayhead, attached to the dispense solenoid, controls the outlet flow rate of the water. The number and size of the holes determines the flow rate.

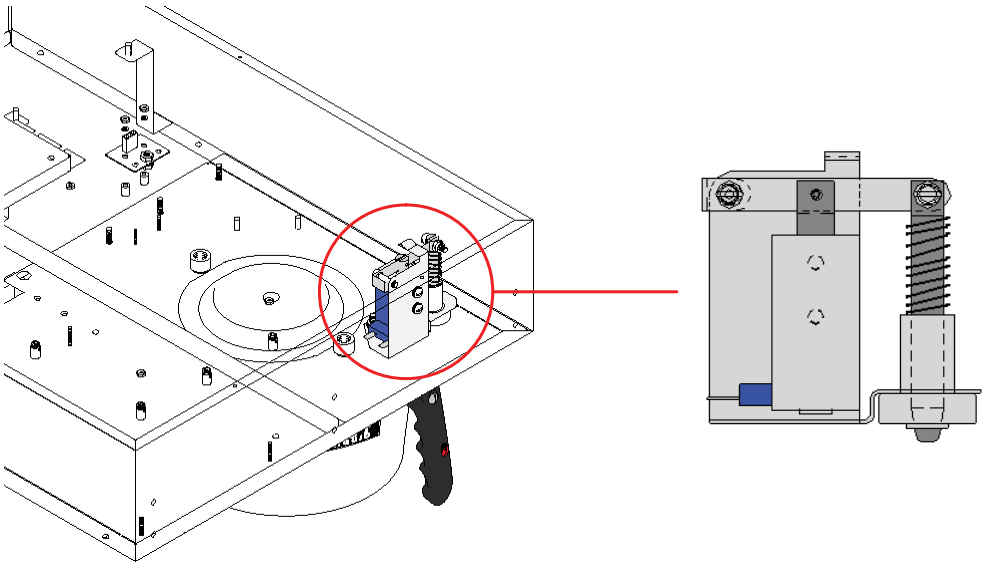


Bypass Valve



Dispense Valve

Since the brewer incorporates Pulse Brew technology, the brew valves and bypass valves will open and close up to 12 times during a brew cycle. During the brew cycle and the programmed drip out time the funnel lock solenoid will be engaged to prevent the funnel from being removed. It is important to note that the control board supplies DC voltage to the funnel lock solenoid to prevent it from vibrating.

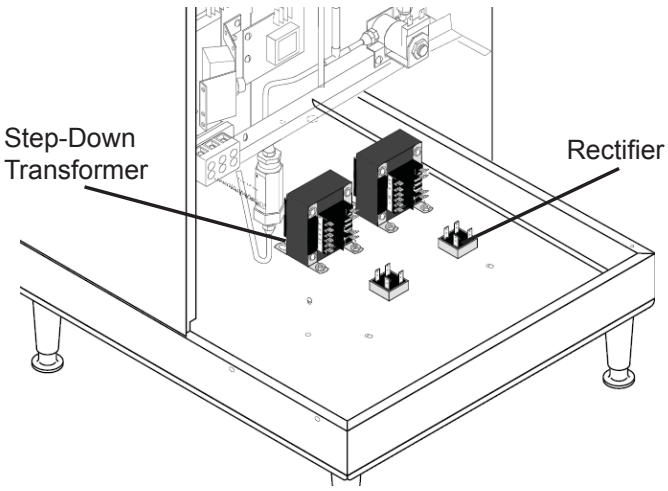


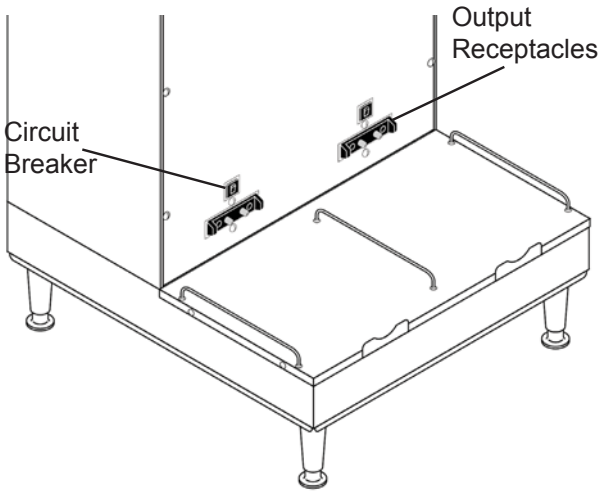
Coffee Holding System

The coffee holding system consists of:
- Soft Heat® server
- Transformer
- Rectifier
- Spring contacts

The coffee holding system maintains the finished product at the desired temperature. The brewed coffee is stored in the server utilizing Bunn Soft Heat® technology.

The brewer provides 24VDC to the Soft Heat® servers through contacts in the front of the machine. Line voltage from the brewer is stepped down to 24VAC and then goes through a bridge rectifier to convert it to DC. There is a 4amp circuit breaker to protect the contacts.



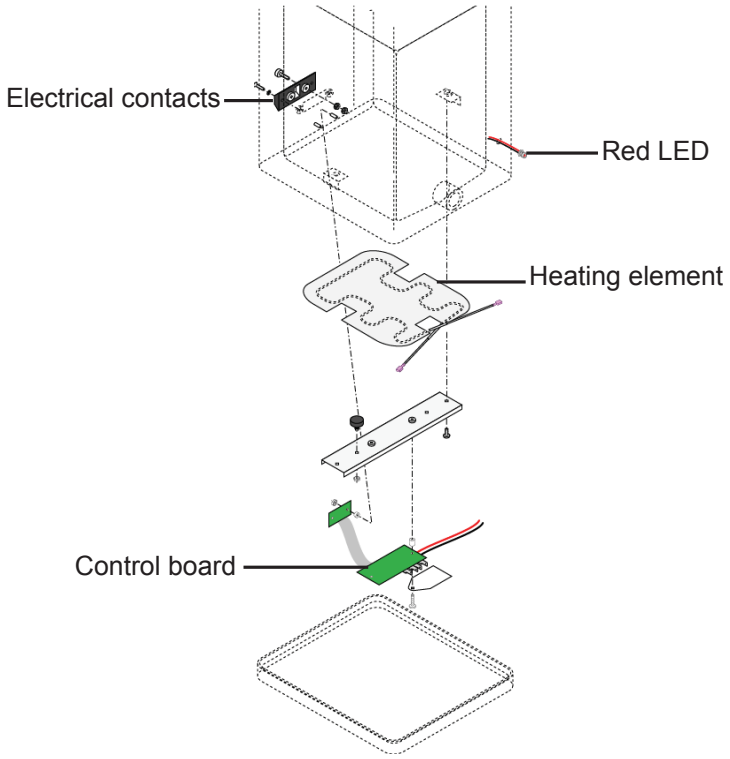


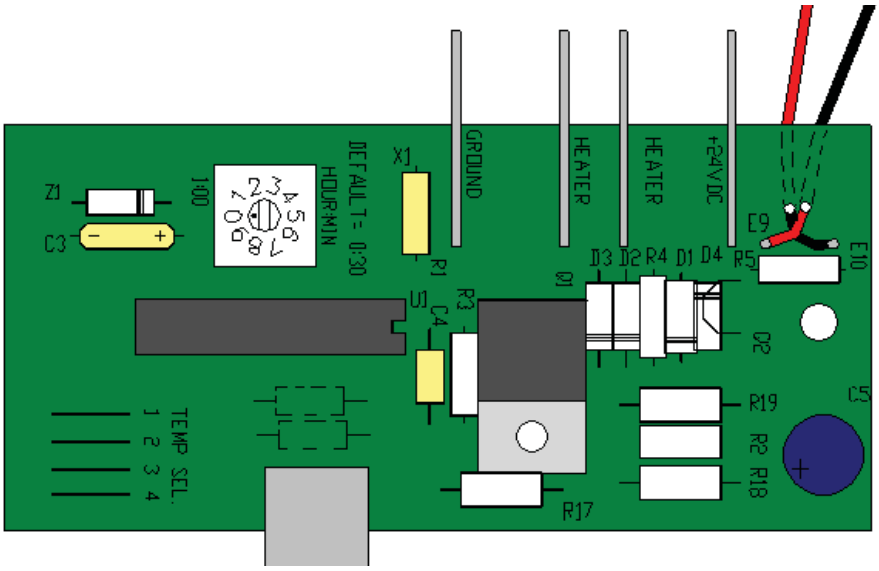
The Soft Heat® Server

The server stores and dispenses the brewed coffee. Soft Heat® technology allows the coffee to be maintained at a set temperature for a set period of time. These settings are programmed from the factory but can be adjusted by customer request. The server features a safety fresh brew thru-lid, regular and decaf indicator, a faucet guard, and two carrying handles on the top.

The server contains the holding vessel for the coffee wrapped in dense insulation. In the bottom of the server is a 72W 24VDC heating element, along with a control board, thermistor, and electrical contacts so the server can receive power from the brewer. On the front of the server there is a red LED that indicates the server is in contact with the brewer.

The Soft Heat® control board contains controls for temperature and holding time. The holding time is adjusted by turning the small white dial. The temperature can be adjusted by cutting or reconnecting leads to resistors. Note- the resistor can only be reconnected by soldering the connections.





Number	Minutes
0	Off
1	30
2	45
3	60
4	90
5	120
6	150
7	180
8	210
9	240

Control Temperature Shown in ºF	Jumper Program Position I = In O = Cut			
	1	2	3	4
176.0	I	I	I	O
176.9	I	I	O	I
177.8	I	I	O	O
178.7	I	O	I	I
179.6	I	O	I	O
180.5	I	O	O	I
181.4 (Default)	I	I	I	I
182.3	I	O	O	O
183.2	O	I	I	I
184.1	O	I	I	O
185.0	O	I	O	I
185.9	O	I	O	O
186.8	O	O	I	I
187.7	O	O	I	O
188.6	O	O	O	I
189.5	O	O	O	O

UNIT 4 PREVENTIVE MAINTENANCE

Unit Objectives

Given a realistic scenario depicting a machine requiring a preventive maintenance, the learner will be able to identify which elements of a component need to be serviced without error.

Given a machine, all the necessary tools and safety equipment, the learner will be able to identify the components that need to be serviced for the PM.

Preventive Maintenance

In order to maintain proper operation and long service life BUNN recommends performing the preventive maintenance every 6 months. Individual customers will vary with some customers choosing not to receive preventive maintenance.

Tools Required:
- 2 Flat blade screwdrivers (1 small tip, 1 medium tip)
- Phillips screwdriver
- 2 adjustable wrenches
- Channel lock pliers
- Needle nose pliers
- Basin wrench Bunn PN: 01060.0000
- Deliming tool Bunn PN: 38227.0000

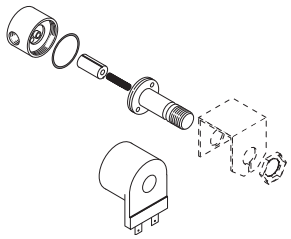
Prior to servicing the brewer:
- Disconnect the electrical supply
- Shut off the water supply
- Drain the water tank
- Remove the front panel
- Remove the top panel

PM Steps

Step 1: Disassemble and clean the strainer assembly

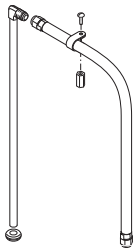
- □ Using an adjustable wrench, loosen the flare nuts on the top and bottom of the strainer assembly
- □ Using two adjustable wrenches, disassemble the strainer
- □ Rinse and scrub the fine mesh screen to remove any mineral build-up
- □ Reassembly is the opposite of disassembly

Step 2: Rebuild the fill solenoid- Skinner Valve (Note do not remove the valve from the machine)



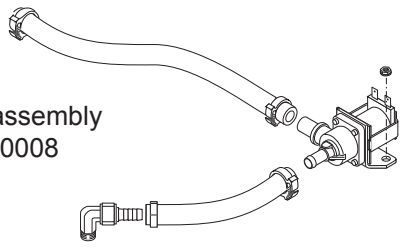
- □ Using the basin wrench, remove the nut from the front of the valve
- □ Disconnect the electrical leads from the valve coil
- □ Remove the coil from the valve stem
- □ Using the basin wrench, unscrew the valve stem from the base
- □ Replace the valve plunger and spring using the rebuild kit Bunn P/N: 01111.0000
- □ Reassembly is the opposite of disassembly

Step 3: Remove and clean the fill tube



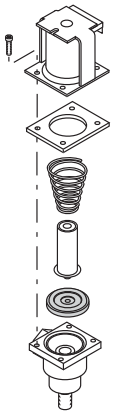
- □ Using an adjustable wrench remove the tube fitting from the fill tube on top of the tank
- □ Gently pull the fill tube out of the top of the tank
- □ Wipe any mineral deposits from the exterior of the tube
- □ Clean any mineral deposits from the bottom of the tube
- □ Clean any obstructions from the interior of the tube
- □ Reinstallation is the opposite of removal

Step 4: Rebuild the by-pass solenoids



- □ Remove the hose clamps that secure the tubing to the valve
- □ Remove the two nuts that hold the solenoid bracket to the machine
- □ Gently remove the tubing from the valve body
- □ Using a flat blade screwdriver, remove the four screws and separate the valve assembly
- □ Replace plunger, spring, and rubber seat using the rebuild kit Bunn P/N: 11517.0008
- □ Clean any mineral build-up from the valve
- □ Reassembly is the opposite of disassembly

Step 5: Rebuild the dispense solenoids



- □ Disconnect the wire leads to the solenoid
- □ Unscrew the sprayhead from the bottom of the valve
- □ Remove the securing nut from the bottom of the valve
- □ Remove the clip from the tube on the valve fitting
- □ Remove the tube from the barbed fitting on the rear of the valve
- □ Remove the valve from the brewer
- □ Remove the four Phillips head screws and disassemble the valve
- □ Replace plunger, spring, and rubber seat using the rebuild kit Bunn P/N: 11517.0008
- □ Clean any mineral build-up from the valve
- □ Reassembly is the opposite of disassembly

Step 6: Clean the tank fittings that supply water to the solenoid valves (Note depending on the age of the brewer this will be either a single “T” connector or individual connectors for the dispense and bypass tubes.)

- □ Remove the clip from the end of tubes
- □ Gently remove the tubing from the tank fittings
- □ Use a screwdriver to remove and mineral build-up from the fittings
- □ Reattach the tubing and clips

Step 7: Remove and clean the temperature sensor

- □ Gently pull the temperature sensor from the grommet in the top of the tank
- □ Wipe any mineral build-up from the sensor
- □ Reinstallation is the opposite of removal

Step 8: Remove and clean the fill probe

- □ Gently pull the fill probe out of the grommet
- □ Wipe any mineral deposits off of the probe

Step 9: Remove and clean the sprayheads

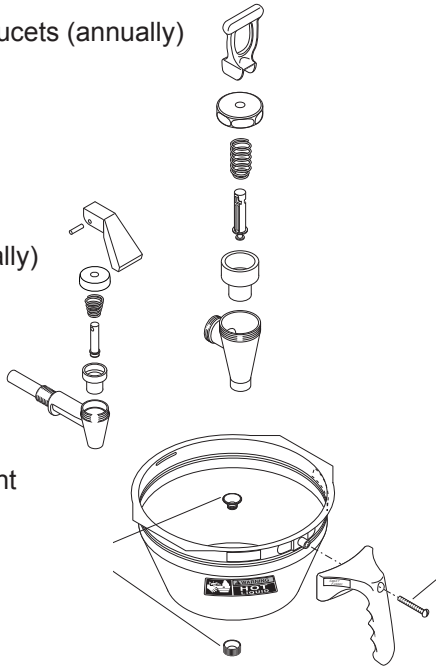
- □ Using the pointed end of the deliming tool, remove any mineral build-up from the sprayhead outlet holes

Step 10: Replace the seat cups in all the Soft Heat server faucets (annually)

- □ Ensure the server is completely empty
- □ Unscrew the faucet bonnet from the assembly
- □ Remove the old faucet seat cup
- □ Install the new seat cup Bunn P/N: 00600.0000
- □ Reassembly is the opposite of disassembly

Step 11: Replace the seat cup in the hot water faucet (annually)

- □ Unscrew the faucet bonnet from the assembly
- □ Remove the old faucet seat cup
- □ Install the new seat cup Bunn P/N: 02766.0000
- □ Reassembly is the opposite of disassembly



Step 12: Check funnels, handle and tip are tight

- □ Ensure the screw securing the handle to the funnel is tight
- □ Ensure the funnel tip, the bottom outlet, is tight

Step 13: Examine power cord for any damage

Step 14: Examine water supply for any leaks

Step 15: Check the funnel lock solenoids for proper operation (Note the brewer must be on to perform this step)

- □ Manually activate each funnel lock in the Systems Tools menu

Step 16: Calibrate flow rates (Note the brewer must be on to perform this step)

- □ Follow the procedures in section 2 of this manual

Step 17: Check the Soft Heat® servers for proper operation (Note the brewer must be on to perform this step)

- □ Red LED should be on
- □ Bottom panel inside the server should be hot to the touch

Unit Objectives

Given a realistic scenario depicting a broken machine, the learner will be able to effectively troubleshoot, diagnosis, and repair the problem returning the machine to normal operation.

Given a machine displaying an error message, all the necessary tools and safety equipment, the learner will be able to access the software and diagnosis the problem.

The leaner will be able to access the programming menu.
The learner will be able to navigate to the Service Tools menu.
The learner will be able use the Service Tools menu to test inputs or outputs.

Given a list of error messages and issues, the learner will be to identify the probable cause of the message or issue.

Given a brewer with a defective component, the learner will be able to test the component to determine the cause of the defect.

Service Tools

The Dual BrewWISE® brewer features on-board troubleshooting. Since all of the machine's components are controlled or activated by the control board you can activate and test components individually from the user interface. This allows you to listen to solenoid valves opening, observing the flow of water or test to see if a component is receiving voltage using a meter.

The Service Tools option is located in Level 2 of the programming. Enter Level 2 programming by pressing and holding the right hidden switch for 5 seconds. Use the right hidden switch to scroll to the "Service Tools" screen.

Press the Control button to select "Yes". This will enter the "Service Tools" feature.

SERVICE TOOLS ?
NO YES

In the "Service Tools" selection their are 4 screens available, by selecting "Yes", you will enter that test function, by selecting "No" you will move to the next test.

TEST OUTPUTS?
NO YES

Test Outputs supplies voltage to load components in the brewer.

TEST SWITCHES?
NO YES

Tests the inputs from the membrane switch.

TEST SERVERS?
NO YES

The machine will indicate if it sees a server in place or missing.

TEST FREQUENCY?
NO YES

Indicates the transmit frequency of the funnel sensing coils.

Test Outputs

LEFT BREW VALVE
ON NEXT OFF

LEFT BYPASS
ON NEXT OFF

LEFT FUNNEL LOCK
ON NEXT OFF

LEFT SERVER
ON NEXT OFF

RIGHT BREW VALVE
ON NEXT OFF

RIGHT BYPASS
ON NEXT OFF

RIGHT FUNNEL LOCK
ON NEXT OFF

RIGHT SERVER
ON NEXT OFF

REFILL VALVE
ON NEXT OFF

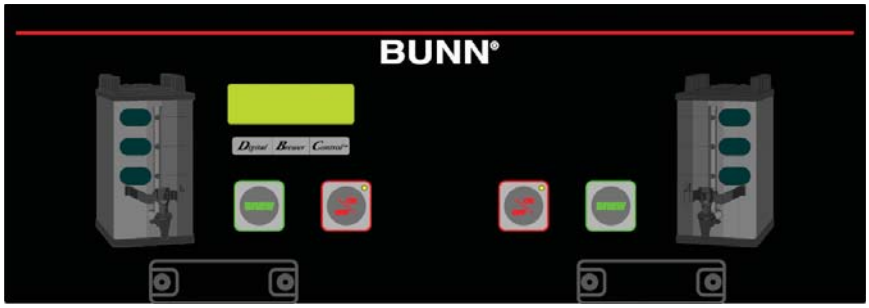
TANK HEATERS
ON NEXT OFF

HEATER CONTACTOR
ON NEXT OFF

Test Switches

TEST SWITCHES?	NOTHING PRESSED
NO YES	

Press any of the input buttons on the membrane switch, the display will show which button is being pressed.



Test Servers

TEST SERVERS?	SERVER REMOVED ➡
NO YES	⬅ ⬅ IN PLACE

Insert or remove a server from each side of the brewer. The brewer indicates if the server is removed or in place based on the transformer load.

Test Frequency

TEST FREQUENCY?	⬅⬅⬅ 124.7 Khz .5
NO YES	5. 124.7 Khz ➡➡➡

The funnel sensing circuit is tuned to 125 kHz. If the circuit is not tuned correctly, then the funnel information will not be transferred to the brewer. Therefore, the microprocessor is constantly fine tuning to get as close as possible to 125 kHz. It has eight possible tuning steps numbered 0 - 7. When you look at the “TEST FREQUENCY” screen you see something like (124.7 KHZ .5) The 124.7 is the frequency, and the 5 is the tuning step. The decimal point next to the 5 indicates the funnel is being detected; if the funnel is removed the decimal point should turn off.

Service Fault Messages

The brewer features several error messages for problems occurring within the machine. These error messages be show up on the display.

OVERFLOW CUP FULL. EMPTY CUP	This indicates that the tank overflow is full. The unit may be overfilling or boiling.
HEATING TIME TOO LONG	This message will appear if the control board does not see the programmed water temperature within 60 minutes.
FILL TIME TOO LONG	This message will appear if the control board does not see the tank fill within 30 minutes.

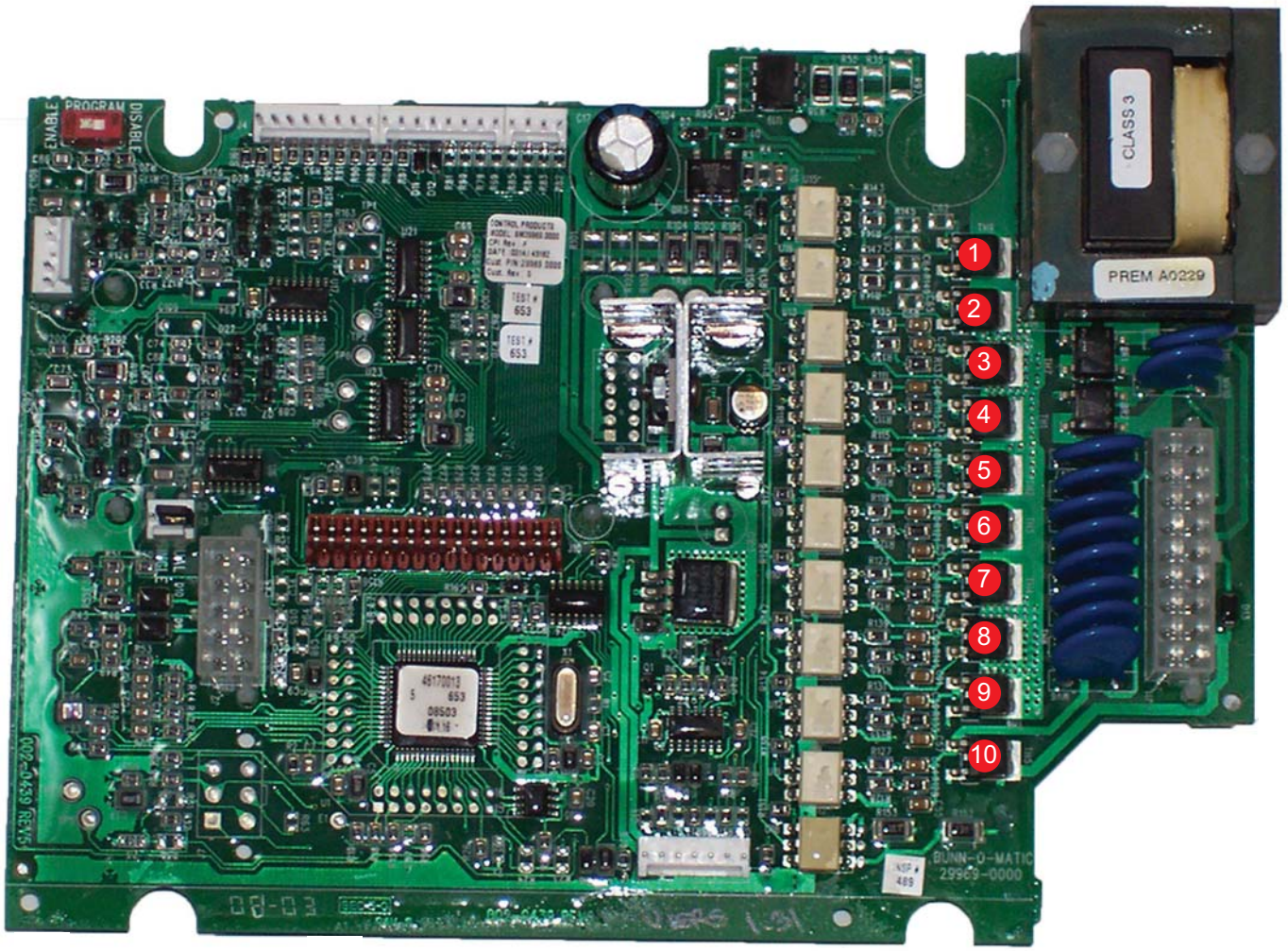
TEMP SENSOR OUT OF RANGE	If the control board loose contact with the temperature sensor or senses shorted connection it will display this message.

Operator Fault Messages

The following fault messages will appear on the display if the operator needs to take corrective action.

◄◄ SERVER NOT IN PLACE	The brewer does not sense a server in place. The brewer will only display this message if Yes has been selected in the Server Detect programming menu. Otherwise the unit will brew.
◄◄ NO FUNNEL PRESENT	The brewer does not sense a funnel in place. The brewer will only display this message Yes has been selected in the Funnel Detect programming menu. Otherwise the unit will brew.
TEMPERATURE TOO LOW	Wait for the brewer to heat up to proper temperature. The brewer will only display this message if the Brew Lockout feature is set to NO.
◄◄CHECK FUNNEL FOR FRESH COFFEE	The brewer did not see the funnel removed since the previous brew cycle.
BREW STOPPED! FUNNEL REMOVED?	The funnel was removed during the brew cycle. Only applicable if the brewer does not have a funnel lock solenoid.
BREW STOPPED! SERVER REMOVED?	The server was removed during the brew cycle.
BREW STOPPED! IS SWITCH OFF?	The brew switch was turned off during the brew cycle.

Triac Map



1. Left Funnel Lock
2. Right Funnel Lock
3. Left Transformer
4. Left Dispense Valve
5. Right Dispense Valve
6. Left Bypass Valve
7. Right Bypass Valve
8. Right Transformer
9. Spare
10. Refill Solenoid